

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1 - 23 (canceled)

24. (currently amended) A plasma processing apparatus for processing a sample located in a process chamber inside of a vacuum vessel, using a plasma generated therein comprising:

a sample stage disposed at a lower position inside of the process chamber and having the sample located thereon;

a plate constituting a ceiling of the process chamber inside of the vacuum vessel and held at an upper part of the vacuum vessel, the plate being disposed opposite to and parallel with the sample stage so as to face the plasma generated inside a space between the sample stage and the plate, wherein the plate covers an area extending from a center of the sample to at least a periphery of the sample, a through-hole is disposed in the plate, and electric power is supplied-applied to the plate for generating the plasma;

an optical transmitter disposed inside of the vacuum vessel and at a back side spaced from a back surface of the plate and held therein at a sufficiently small distance so as to prevent substantially abnormal discharge thereat, an end face of the optical transmitter being opposite to and almost in contact with a spaced from the back surface of the plate by the sufficiently small distance, and an opening of the through-hole in the plate having a smaller diameter than a diameter of the optical

transmitter, wherein the optical transmitter receives at the end face thereof light from the process chamber via the through-hole; and

a holder disposed at an upper side of the plate which holds the optical transmitter on the upper part of the vacuum vessel with respect to at the back side surface of the plate so as to be independently detachable to outside of the vacuum vessel.

25. (previously presented) A plasma processing apparatus according to claim 24, wherein a diameter-depth ratio of the through-hole in the plate is in a range of 5 to 100.

26. (currently amended) A plasma processing apparatus according to claim 24, wherein the plate is made of an electrically conductive material silicon and carbon.

Claim 27 (canceled)

Claim 28 (canceled)

29. (currently amended) A plasma processing apparatus according to claim 25, wherein the plate is made of an electrically conductive material silicon and carbon.

30. (currently amended) A plasma processing apparatus provided with a vacuum vessel inside of which an upper plate and a lower electrode are disposed

substantially in parallel and opposing to each other in a process chamber, a plasma for processing a sample is generated in a space between the upper plate and the lower electrode by an electric field based on an electric power supplied applied to the upper plate, comprising:

a power source which provides radio frequency electric power to the lower electrode;

an optical transmitter disposed inside of the vacuum vessel at and spaced from a back side-surface of the upper plate and held therein at a sufficiently small distance so as to substantially prevent abnormal discharge thereat, the optical transmitter being held on an upper part of the vacuum vessel so as to be independently detachably to outside of the vacuum vessel, an end face of the optical transmitter being disposed opposite to the back surface of the upper plate, and an opening of a through-hole disposed in the upper plate has a smaller diameter than a diameter of the optical transmitter, wherein the optical transmitter receives at the end face thereof light from the process chamber via the through-hole; and

a holder disposed at an upper side portion of the upper plate which holds the optical transmitter at the back side-surface of the upper plate so that the end face is almost in contact with spaced from the back surface of the upper plate by the sufficiently small distance;

wherein the upper plate constitutes a ceiling of the process chamber inside of the vacuum vessel facing the plasma and is held at the upper part of the vacuum vessel, and the upper plate covers an area extending from a center of the sample to at least a periphery of the sample, and faces the plasma.

31. (previously presented) A plasma processing apparatus according to claim 30, wherein a diameter-depth ratio of the through-hole in the upper plate is in a range of 5 to 100.

32. (currently amended) A plasma processing apparatus according to claim 30, further comprising a disk formed member disposed at the upper side portion of the upper plate and on the plasma facing side of which the upper plate is disposed, wherein the electric power for generating the plasma is supplied applied to the upper plate via the disk formed member.

33. (previously presented) A plasma processing apparatus according to claim 32, wherein the disk formed member is mounted with respect to the vacuum vessel.

34. (currently amended) A plasma processing apparatus according to claim 31, further comprising a disk formed member disposed at the upper side portion of the upper plate and on the plasma facing side of which the upper plate is disposed, wherein the electric power for generating the plasma is supplied applied to the upper plate via the disk formed member.

35. (previously presented) A plasma processing apparatus according to claim 34, wherein the disk formed member is mounted with respect to the vacuum vessel.

36. (new) A plasma processing apparatus according to claim 24, wherein the plate having the through-hole has process gas supplied through the through-hole to the inside of the process chamber.

37. (new) A plasma processing apparatus according to claim 30, wherein the plate having the through-hole has process gas supplied through the through-hole to the inside of the process chamber.